THE SUBTLE INTERACTIONS BETWEEN POLYCYCLIC AROMATIC HYDROCARBONS AND OTHER ASTROCHEMICALLY RELEVANT MOLECULES

AMANDA STEBER, CRISTOBAL PEREZ, SÉBASTIEN GRUET, DONATELLA LORU, *FS-SMP, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany*; BERHANE TEMELSO, *Division of Information Technology, College of Charleston, Charleston, USA*; GEORGE C SHIELDS, *Department of Chemistry, Furman University, Greenville, SC, USA*; MELANIE SCHNELL, *FS-SMP, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany*.

The roles that polycyclic aromatic hydrocarbons (PAHs) play in the interstellar medium (ISM) are thought to be quite diverse, from ice grain interactions to hydrogen production. Because of the importance that these roles would have in the ISM, we are interested in using structural information obtained via microwave spectroscopy to disentangle the first interactions between PAHs and astronomically relevant molecules. To do this, we have used chirped pulse Fourier transform microwave (CP-FTMW) spectroscopy to investigate PAHs clustered with astronomical constituents, such as water. The PAHs vary in size and aromaticity, creating different preferred binding motifs of the clustered molecule(s). By using isotopic data (either measured in natural abundance or through isotopically enriched samples) exact structural data has been gathered. A comparison of these systems will be presented with an in depth look at the different binding interactions present in each cluster and their binding motifs.